

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.**

Application Serial Number: 10/043,639C  
Source: 1FW/6  
Date Processed by STIC: 5/12/05

# ***ENTERED***



IFW16

## RAW SEQUENCE LISTING

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:29

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw

```

3 <110> APPLICANT: SARCABAL, PATRICIA
4      CROUX, CHRISTIAN
5      SOUCAILLE, PHILIPPE
7 <120> TITLE OF INVENTION: METHOD FOR PREPARING 1,3-PROPANEDIOL BY A RECOMBINANT
8      MICRO-ORGANISM IN THE ABSENCE OF COENZYME B12 OR ONE OF
9      ITS PRECURSORS
11 <130> FILE REFERENCE: CHEP:004US
13 <140> CURRENT APPLICATION NUMBER: 10/043,639C
14 <141> CURRENT FILING DATE: 2002-01-09
16 <150> PRIOR APPLICATION NUMBER: PCT/FR00/01981
17 <151> PRIOR FILING DATE: 2000-07-07
19 <150> PRIOR APPLICATION NUMBER: FR 99/08939
20 <151> PRIOR FILING DATE: 1999-07-09
22 <160> NUMBER OF SEQ ID NOS: 14
24 <170> SOFTWARE: PatentIn Ver. 2.1
26 <210> SEQ ID NO: 1
27 <211> LENGTH: 2364
28 <212> TYPE: DNA
29 <213> ORGANISM: Clostridium butyricum
31 <400> SEQUENCE: 1
32 atgataagta aaggatttag tacccaaca gaaagaataa atatttttaa ggctcaaata 60
33 ttaaattgcta aaccatgtgt tgaatcagaa agagcaatat taataacaga atcatttttaa 120
34 caaacagaag gccagccagc aatttttaaga agagcattgg cattgaaaca catacttgaa 180
35 aatatcccta taacaattag agatcaagaa cttatagtgg gaagtttaac taaagaacca 240
36 aggtcttcac aagtatttcc tgagttttct aataagtggt tacaagatga attggataga 300
37 ttaataaaga gaactggaga tgcattccaa atttcagaag aaagtaaaga aaaattaaaa 360
38 gatgtctttg agtattggaa tggaaagaca acaagtgagt tagcaacttc atatatgaca 420
39 gaggaacaa gagaggcagt aaattgtgaa gtattttactg taggaaacta ctattataat 480
40 ggcgtaggac atgtatctgt agattatgga aaagtattaa gggttggatt taatgggatt 540
41 ataaatgagg ctaaggaaca attagaaaaa aacaggagta tagatcctga ttttataaag 600
42 aaagaaaaat tcctaaatag tgttattatc tcatgccaag ctgcaataac atatgtaa 660
43 agatatgcta aaaaggctaa agagattgca gataatacaa gtgatgcaa aagaaaagct 720
44 gaattaaatg aatagcaaa aatttgttca aaagtttcag gagagggagc taaatctttc 780
45 tatgaagcat gtcaattatt ttggtttatt catgcaataa taaatataga atctaattgga 840
46 cattctatct ctcagctag atttgatcaa tacatgtatc catattatga aaatgataaa 900
47 aatataacag ataagtttgc tcaagaatta atagattgta tctggattaa attaaatgat 960
48 attaataaag taagagatga gatttcaact aaacattttg gtggttaccc aatgtatcaa 1020
49 aaattaattg ttgggggtca aaattcagaa ggaaaagatg caactaataa agtatcatat 1080
50 atggcattag aagcagctgt ccatgtaaag ttgcctcagc catctttgtc agtaagaata 1140
51 tggataaaga ctccagatga attttgcct agagcagcag aattaactag agaagggtta 1200
52 ggacttcctg cttattataa tgatgaagtt attattccag cattagtttc tagaggtctt 1260
53 acattagaag atgcaagaga ctacggaata attggatgtg ttgaaccaca aaagccagga 1320
54 aaaacagaag gatggcatga ttcagcatc tttaatcttg caagaatagt agagttaact 1380

```

## RAW SEQUENCE LISTING

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:29

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw

```

55 ataaattctg gatttgataa aaataaacag attggacctt aaactcaaaa ttttgaagaa 1440
56 atgaaatcct ttgatgaatt catgaaagct tataaagctc aaatggagta ttttgtaaaa 1500
57 catatgtgct gtgctgataa ttgcatagat attgcacatg cagaaagagc tccattacct 1560
58 ttcttgtcat caatggttga taattgtatc ggaaaaggaa agagccttca agatggtggt 1620
59 gcagaatata acttcagtgg accacaaggt gttggagtag ctaatattgg agattcatta 1680
60 gttgcagtta aaaaaattgt gtttgatgaa aataagatta ctcttcaga attaaagaaa 1740
61 acattaaata atgattttta aaattcagaa gaaatacaag cttactaaa aaatgctcct 1800
62 aagtttgga atgatattga tgaagttgat aatttagcta gagagggtgc attagtatac 1860
63 tgtagagaag ttaataaata taaaaatcca aggggaggaa attttcaacc aggattatat 1920
64 ccatcttcaa ttaatgtata ttttggaagc ttaacagggt ctactccaga tgggaaggaaa 1980
65 tccggacaac cattagctga tggggtttct ccatcaagag gctgtgatgt atctggacct 2040
66 actgcagctt gtaactcagt tagtaaatga gatcatttta tagcttcaaa tgggaacttta 2100
67 tttaatcaaa aattccatcc gtcagcatta aaaggtgata atggattaat gaatttatca 2160
68 tcattaataa gaagttattt tgatcaaaag ggatttcatt ttcaatttaa tgtaatatag 2220
69 aaaaaatat tacttgcagc acaaaaaaat cctgaaaaat atcaagattt aattgttaga 2280
70 gttgcaggat atagtgcaca gttcatttct ttagataaat ctattcaaaa tgatattatt 2340
71 gcaagaactg aacatgttat gtaa                                     2364

```

74 &lt;210&gt; SEQ ID NO: 2

75 &lt;211&gt; LENGTH: 915

76 &lt;212&gt; TYPE: DNA

77 &lt;213&gt; ORGANISM: Clostridium butyricum

79 &lt;400&gt; SEQUENCE: 2

```

80 atgagtaagg agataaaagg cgttttatatt aacatacaaa aattttcggtt acatgatggg 60
81 cctggaataa gaactatagt attttttaag ggatgttcaa tgtcgtgctt atggtgcagt 120
82 aatccagaat cccaagatat taaacctcaa gtaatgttta ataaaaattt atgtacaaaa 180
83 tgtggaagat gtaaattctca atgtaaaagt gcaggatttg atatgaattc agaatatagg 240
84 atagataaaa gcaaatgtac agagtgtaca aaatgtgttg ataattgctt aagcggggca 300
85 ctgtttattg aaggaaggaa ttacagtgtt gaagacgtta taaaggaatt gaaaaaagat 360
86 agtgttcaat atagaagatc aaacggtgga attacactat ctggagggga agtattactt 420
87 caaccagatt ttgcagtgga gcttttaaaa gagtgtaaat catatggctg gcacactgcc 480
88 attgaaacag caatgtatgt taatagtga tctgtaaaaa aagtaattcc atatatatag 540
89 ctggctatga ttgatataaa aagtatgaat gatgaaatcc ataggaaatt tacaggagtg 600
90 agtaacgaaa taatattaca aaacattaaa ttaagtgatg aattagctaa agaaataata 660
91 atcagaattc ctgtaataga aggatttaat gcagatttac aaagtatagg agcaatagct 720
92 caattttcaa aatcattaac aaatcttaaa agaatagatc ttcttccata ccataattat 780
93 ggagaaaata agtatcaagc aattggaaga gagtattctt tgaaagaact aaaatcacct 840
94 agtaaagaca aaatggaaag attaaaagct ttagttgaaa tcatgggaat accgtgcaca 900
95 attggagctg agtaa                                     915

```

98 &lt;210&gt; SEQ ID NO: 3

99 &lt;211&gt; LENGTH: 28

100 &lt;212&gt; TYPE: DNA

101 &lt;213&gt; ORGANISM: Clostridium butyricum

103 &lt;400&gt; SEQUENCE: 3

```

104 tagataaaaac aaacaaaaat gttattat                                     28

```

107 &lt;210&gt; SEQ ID NO: 4

108 &lt;211&gt; LENGTH: 1158

109 &lt;212&gt; TYPE: DNA

110 &lt;213&gt; ORGANISM: Clostridium butyricum

112 &lt;400&gt; SEQUENCE: 4

## RAW SEQUENCE LISTING

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:29

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw

```

113 atgagaatgt atgattatatt agtaccgaagt gtaaaacttta tgggagcaaa ttcagtatca 60
114 gtagtaggtg aaagatgcaa aatattaggt ggaaaaaaag cattgatagt tacagataag 120
115 tttctaaaag atatggaagg tggagctggt gaattaacag ttaaatattt aaaagaagct 180
116 ggattagatg ttgtatatta tgacggagtt gaaccaaatac caaaagatgt taatgttata 240
117 gaaggattaa aaatatattaa agaagaaaat tgtgacatga tagtaactgt aggtggagga 300
118 agttcgcatg attgcggttaa gggaaatagga attgctgcaa cacatgaagg agatctttat 360
119 gattatgcag gaatagaaac acttgtcaat ccattgccac caatagtagc tgtaaatact 420
120 actgcaggaa ctgctagtga attaactcgt catttgtgtat tgactaatac aaaaaagaaa 480
121 ataaaatttg ttatagttag ctggagaaat ttgcctctag tatctataaa tgatccaatg 540
122 cttatggtca aaaaacctgc aggattaaca gcagctacag gaatggatgc tttaacacat 600
123 gcaatagaag catatgtatc aaaagatgca aatccagtaa cagatgcttc agcaatacaa 660
124 gctattaaat taatttcaca aaatttaaga caagctgtag ctttaggaga aaatcttgaa 720
125 gcaagagaaa atatggctta tgcatacatta ctagcaggaa tggcatttaa taatgctaat 780
126 ttaggatatg tacatgcaat ggctcatcaa ttagggggac tgtatgatat ggcacatggt 840
127 gttgctaatt caatgctatt accacatggt gaacgttata atatgctatc aaatcctaag 900
128 aagtttgcag atatgcaga atttatggga gaaaatatat ctggactttc tgtaattgaa 960
129 gcagcagaga aagccataaa tgcaatgttc aggctttcag aggatgttgg aattccgaaa 1020
130 agtctaaagg agatgggagt gaaacaagaa gattttgagc atatggcaga actagctctt 1080
131 ttagatggaa atgcctttag caatccaaga aaaggaaatg caaaagatat tataaatatt 1140
132 ttttaaggctg cttattaa                                     1158
135 <210> SEQ ID NO: 5
136 <211> LENGTH: 4963
137 <212> TYPE: DNA
138 <213> ORGANISM: Clostridium butyricum
140 <400> SEQUENCE: 5
141 gaataaaagt tatctataaa tgataaaagt cattattaga taacttttta ttttaaaata 60
142 actactaata aaaagttcaa agaattattac agtagacatt tgaaagaatg caatgataaa 120
143 caattgtatt agttttaact ttagataaaa caaacaacaa tgttattatt agccaagaaa 180
144 atactgttac aaaagaaaag agaaaaacat agcaaaagag taccaatatt aagcaataaa 240
145 gtttgttaaa atattatcaa taaaatgata agattagata aaccaagtaa gaatgtgatt 300
146 ggaggagtaa aaatgataag taaaggattt agtaccacaa cagaaagaat aaatatttta 360
147 aaggctcaaa tattaaatgc taaacctagt gttgaatcag aaagagcaat attaataaca 420
148 gaatcattta aacaaacaga aggccagcca gcaattttaa gaagagcatt ggcattgaaa 480
149 cacatacttg aaaatatccc tataacaatt agagatcaag aacttatagt gggaagttta 540
150 actaaagaac cagatgcttc acaagtattt cctgagtttt ctaataagtg gttacaagat 600
151 gaattggata gattaaataa gagaactgga gatgcattcc aaatttaaga agaaagtaaa 660
152 gaaaaattaa aagatgtctt tgagtattgg aatggaaaga caacaagtga gttagcaact 720
153 tcatatatga cagaggaaac aaaagatgca gtaaattgtg aagtatttac tgtaggaaac 780
154 tactattata atggcgtagg acatgtatct gtagattatg gaaaagtatt aaggggttga 840
155 tttaatggga ttataaatga ggctaaggaa caattagaaa aaaacaggag tatagatcct 900
156 gattttataa agaaagaaaa attcctaaat agtggtatta tctcatgcca agctgcaata 960
157 acatatgtaa atagatatgc taaaagggtt aaagagattg cagataatac aaaagatgca 1020
158 aaaagaaaag ctgaattaaa tgaaatagca aaaatttggt caaaagatac aggagagggga 1080
159 gctaaatctt tctatgaagc atgtcaatta ttttggttta tacatgcaat aataaatata 1140
160 gaatctaatt gacattctat ttctccagct agatttgatc aatccagtaa tccatattat 1200
161 gaaaatgata agaattattac agataagttt gctattaaat taatagattg taattggatt 1260
162 aaattaaatg atattaataa agtaagagat gagatttcaa ctaaacattt tgggtggttac 1320
163 catatgtatc aaaaattaat tgttgggggt caaaattcag aaggaaaaga tgcaactaat 1380
164 aaagtatcat atatggcttt agaagcagct gtccatgtaa agttgcctca gccatctttg 1440

```

## RAW SEQUENCE LISTING

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:29

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw

```

165 tcagtaagaa tatggaataa gactccagat gattttgagc ttagagcagc aggattaact 1500
166 agagaagggg taggacttcc tgcttattat aatgatgaag ttattattcc agcattagtt 1560
167 tctagagggtc ttacattaga atatagcaga gactacggaa taattggatg tgttgaacca 1620
168 caaaagccag gaaaaacaga aggatggcat gattatgcat tctttaatct tgaaagaata 1680
169 gtagagttaa ctataaatc tggatttgat aaaaaagaac agattggacc taaaactcaa 1740
170 aattttgaag aaaggaaatc ctttgatgaa ttcataaagc cttataaagc tcaaattggag 1800
171 tattttgtaa aacatatgtg ctgtgctgat aaatgataag atattgcaca tgcagaaaga 1860
172 gctccattac ctttcttgct accacatggt gataattgta tcggaaaagg aaagagcaat 1920
173 caagctgtag gtgcagaata taacttcagt ggaccacaag gtgttggagt agctaataat 1980
174 ggagattcat tagttgcagt taaaaaaatt gtgtttgatg aaaataagat tactccttca 2040
175 gaattaaaga aaacattaaa taatgatttt aaaaattcag aagaaataca agccttacta 2100
176 aaaaatgctc ctaagtttgg aatgatatt gatgaagttg ataatttagc tagagagggg 2160
177 gcattagtat actgtagaga agttaataaa tatacaaac caaggggagg aaattttcaa 2220
178 ccaggattat atccatcttc aattaatgta tattttggaa gcttaacagg tgctactcca 2280
179 gatggaagga aatccggaca accattagct gatgggggtt cccatcaag aggctgtgat 2340
180 gtatctggac ctactgcagc ttgtaactca gttagtaaat tagatcatt tatagcttca 2400
181 aatggaactt tatttaatac aaattccat ccgtcagcat taaaagggtg taatggatta 2460
182 atgaatttat catcattaat aagaagttat tttgatcaaa agggatttca tgttcaattt 2520
183 aatgtaatag ataaaaaaat attacttgca gcacaaaaaa atcctgaaaa atatcaagat 2580
184 ttaattgtta gagttgcagg atatagtga cagttcattt ctttagataa atctattcaa 2640
185 aatgatatta ttgcaagaac tgaacatggt atgtaaagac agcttttaa ggggataaaa 2700
186 gtaatgagta aggagataaa aggcgtttta tttaacatac aaaaattttc gttacatgat 2760
187 gggcctggaa taagaactat agtatttttt aagggatgtt caatgtcgtg cttatggtgc 2820
188 agtaatccag aatccaaga tattaaacct caagtaatgt ttaataaaaa tttatgtaca 2880
189 aatgtggaa gatgtaaatc tcaatgtaa agtgcaggta ttgatatgaa ttcagaatat 2940
190 aggatagata aaagcaaattg tacagagtgt acaaaatgtg ttgataattg cttagcgagg 3000
191 gcacttggtt ttgaaggaag gaattacagt gttgaagacg ttataaagga attgaaaaaa 3060
192 gatagtgttc aatatagaag atcaaacggg ggaattacac tatctggagg ggaagtatta 3120
193 cttcaaccag attttgcagt ggagctttta aaagagtgt aatcatatgg ctggcacact 3180
194 gccattgaaa cagcaatgta tgttaatatg gaatctgtaa aaaaagtaat tccatatata 3240
195 gatctggcta tgattgatat aaaaagtatg aatgatgaaa tccataggaa atttacagga 3300
196 gtgagtaacg aaataatatt acaaaacatt aaattaagt atgaattagc taaagaataa 3360
197 ataatacaga ttctgtaat agaaggattt aatgcagatt tacaagtat aggagcaata 3420
198 gctcaatttt caaaatcatt acaaaatctt aaaagaatag atcttcttcc ataccataat 3480
199 tatggagaaa ataagtatca agcaattgga agagagtatt ctttgaaaga actaaaatca 3540
200 cctagtaaag acaaaatgga aagattaaaa gctttagtgt aaatcatggg aataccgtgc 3600
201 acaattggag ctgagtaata gtagctttac atcagatatt ttaaaaacaa ttttaatta 3660
202 aaaggagaag attgcatatg agaatgtatg attatttagt accaagtgt aactttatgg 3720
203 gagcaaattc agtatcagta gtaggtgaaa gatgcaaaat attaggtgga aaaaagcat 3780
204 tgatagttac agataagttt ctaaaagata tggaggtgg agctgttgaa ttaacagtta 3840
205 aatattttaa agaagctgga ttagatgttg tatattatga cggagttgaa ccaaatccaa 3900
206 aagatgttaa tgttatagaa ggattaaaaa tatttaagaa agaaaattgt gacatgatag 3960
207 taactgtagg tggaggaagt tcgcatgatt gcggtaaggg aataggaatt gctgcaacac 4020
208 atgaaggaga tctttatgat tatgcaggaa tagaaacact tgtcaatcca ttgccacca 4080
209 tagtagctgt aaatactact gcaggaactg ctagtgaatt aactcgtcat tgtgtattga 4140
210 ctaatacaaa aaagaaaata aaatttggtt tagttagctg gagaaatttg cctctagtat 4200
211 ctataaatga tccaatgctt atggtcaaaa aacctgcagg attaacagca gctacaggaa 4260
212 tggatgcttt aacacatgca atagaagcat atgtatcaaa agatgcaaat ccagtaacag 4320
213 atgcttcage aatacaagct attaaattaa tttcacaaaa ttaagacaa gctgtagctt 4380

```

## RAW SEQUENCE LISTING

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:29

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw

```

214 taggagaaaa tcttgaagca agagaaaata tggcttatgc atcattacta gcaggaatgg 4440
215 catttaataa tgctaattta ggatatgtac atgcaatggc tcatcaatta gggggactgt 4500
216 atgatatggc acatggtggt gctaatagca tgctattacc acatgttgaa cgttataata 4560
217 tgctatcaaa tctaagaag tttgcagata tagcagaatt tatgggagaa aatataatctg 4620
218 gactttctgt aatggaagca gcagagaaag ccataaatgc aatgttcagg ctttcagagg 4680
219 atgttggaat tccgaaaagt ctaaaggaga tgggagtga acaagaagat tttgagcata 4740
220 tggcagaact agctctttta gatggaaatg cctttagcaa tccaagaaaa ggaaatgcaa 4800
221 aagatattat aaatattttt aaggctgctt attaattaat actattttaa ggattcaaag 4860
222 taaaagataa aagatatata tattagattt aagattttat tataggctaa caacaaagaa 4920
223 caagttaagt attaaactta gcttgttctt tggtgtttat ttt 4963
226 <210> SEQ ID NO: 6
227 <211> LENGTH: 783
228 <212> TYPE: PRT
229 <213> ORGANISM: Clostridium butyricum
231 <400> SEQUENCE: 6
232 Met Ile Ser Lys Gly Phe Ser Thr Thr Glu Arg Ile Asn Ile Leu Lys
233 1 5 10 15
235 Ala Gln Ile Leu Asn Ala Lys Pro Cys Val Glu Ser Glu Arg Ala Ile
236 20 25 30
238 Leu Ile Thr Glu Ser Phe Lys Gln Thr Gly Gln Pro Ala Ile Leu Arg
239 35 40 45
241 Arg Ala Leu Ala Leu Lys His Ile Leu Glu Asn Ile Pro Ile Thr Ile
242 50 55 60
244 Arg Asp Gln Glu Leu Ile Val Gly Ser Leu Thr Lys Glu Pro Arg Ser
245 65 70 75 80
247 Ser Gln Val Phe Pro Glu Phe Ser Asn Lys Trp Leu Gln Asp Glu Leu
248 85 90 95
250 Asp Arg Leu Asn Lys Arg Thr Gly Asp Ala Phe Gln Ile Ser Glu Glu
251 100 105 110
253 Ser Lys Glu Lys Leu Lys Asp Val Phe Glu Tyr Trp Asn Gly Lys Thr
254 115 120 125
256 Thr Ser Glu Leu Ala Thr Ser Tyr Met Thr Glu Glu Thr Arg Glu Ala
257 130 135 140
259 Val Asn Cys Glu Val Phe Thr Val Gly Asn Tyr Tyr Tyr Asn Gly Val
260 145 150 155 160
262 Gly His Val Ser Val Asp Tyr Lys Val Leu Arg Val Gly Phe Asn Gly
263 165 170 175
265 Ile Ile Asn Glu Ala Lys Glu Gln Leu Glu Lys Asn Arg Ser Asp Pro
266 180 185 190
268 Asp Phe Ile Lys Lys Glu Lys Phe Leu Asn Ser Val Ile Ile Ser Cys
269 195 200 205
271 Glu Ala Ala Ile Thr Tyr Val Asn Arg Tyr Ala Lys Lys Ala Lys Glu
272 210 215 220
274 Ile Ala Asp Asn Thr Ser Asp Ala Lys Arg Lys Ala Glu Leu Asn Glu
275 225 230 235 240
277 Ile Ala Lys Ile Cys Ser Lys Val Ser Gly Glu Gly Ala Lys Ser Phe
278 245 250 255
280 Tyr Glu Ala Cys Gln Leu Phe Trp Phe Ile His Ala Ile Ile Asn Ile
281 260 265 270

```

VERIFICATION SUMMARY

DATE: 05/12/2005

PATENT APPLICATION: US/10/043,639C

TIME: 12:01:30

Input Set : D:\CHEP004.APP.txt

Output Set: N:\CRF4\05112005\J043639C.raw